SEQUENCE LISTING

<110> FIEBIG, HELMUT
      NANDY, ANDREAS
      CROMWELL, OLIVER

<120> DNA SEQUENCE, AND RECOMBINANT PREPARATION OF THE GRASS
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<130> MERCK-3179

<140> 10/583,093
<141> 2006-06-15

<150> PCT/EP04/013663
<151> 2004-12-01

<150> DE 103 59 352.7
<151> 2003-12-16

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<170> PatentIn Ver. 3.3

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ggc ggg cac gac tac gag ggc ctc tcg tac cgc tcc ctg cag ccc gag     97
Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu Gln Pro Glu
              20                  25                  30

aac ttc gca gtc gtc gac ctc aac cag atg cgg gcg gtg ttg gtg gac    145
Asn Phe Ala Val Val Asp Leu Asn Gln Met Arg Ala Val Leu Val Asp
          35                  40                  45

ggt aag gcc cgc acg gcg tgg gtc gac tcc ggc gcg cag ctc ggc gag    193
Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln Leu Gly Glu
      50                  55                  60

ctc tac tac gcc atc tcc aag tat agc cgc acg ctg gcc ttc ccg gca    241
Leu Tyr Tyr Ala Ile Ser Lys Tyr Ser Arg Thr Leu Ala Phe Pro Ala
65                  70                  75                  80

ggc gtt tgc ccg acc atc ggc gtg ggc ggc aac ctc gcg ggc ggc ggc    289
Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Leu Ala Gly Gly Gly
              85                  90                  95
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ttc ggt atg ctg ctg cgc aag tac ggc atc gcc gca gag aac gtc atc      337
Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu Asn Val Ile
            100               105               110

gac gtg aag ctc gtc gac gcc aac ggc aag ctg cac gac aag aag tcc      385
Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp Lys Lys Ser
            115               120               125

atg ggc gac gac cat ttc tgg gcc gtg agg ggt ggc ggc ggc gag agc      433
Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly Gly Glu Ser
        130               135               140

ttc ggc atc gtg gtc tcg tgg cag gtg aag ctc ctg ccg gtg cct ccc      481
Phe Gly Ile Val Val Ser Trp Gln Val Lys Leu Leu Pro Val Pro Pro
145               150               155               160

acg gtg acc atc ttc aag atc ccc aag tca gtc agc gag ggc gcc gtg      529
Thr Val Thr Ile Phe Lys Ile Pro Lys Ser Val Ser Glu Gly Ala Val
                165               170               175

gac atc atc aac aag tgg caa ctg gtc gcg cct caa ctt ccc gcc gac      577
Asp Ile Ile Asn Lys Trp Gln Leu Val Ala Pro Gln Leu Pro Ala Asp
            180               185               190

ctc atg atc cgc atc att gcg atg ggg ccc aag gcc acg ttc gag gcc      625
Leu Met Ile Arg Ile Ile Ala Met Gly Pro Lys Ala Thr Phe Glu Ala
            195               200               205

atg tac ctc ggc acc tgc aaa acc ctg acg ccg atg atg cag agc aag      673
Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Met Met Gln Ser Lys
        210               215               220

ttc ccc gag ctt ggc atg aac gcc tcg cac tgc aac gag atg tca tgg      721
Phe Pro Glu Leu Gly Met Asn Ala Ser His Cys Asn Glu Met Ser Trp
225               230               235               240

atc gag tcc atc ccc ttc gtc cac ctc ggc cat agg gat tcc ctg gag      769
Ile Glu Ser Ile Pro Phe Val His Leu Gly His Arg Asp Ser Leu Glu
                245               250               255

ggc gac ctc ctc aac cgg aac aac acc ttc aag ccc ttt gcg gag tac      817
Gly Asp Leu Leu Asn Arg Asn Asn Thr Phe Lys Pro Phe Ala Glu Tyr
            260               265               270

aaa tcg gac tac gtc tac gag cca ttc ccc aag agc gtg tgg gag cag      865
Lys Ser Asp Tyr Val Tyr Glu Pro Phe Pro Lys Ser Val Trp Glu Gln
            275               280               285

atc ttc ggc acc tgg ctc gtg aag cct ggt gcg ggg att atg atc ttt      913
Ile Phe Gly Thr Trp Leu Val Lys Pro Gly Ala Gly Ile Met Ile Phe
            290               295               300

gac ccc tac ggt gcc acc atc agc gct acc cca gaa gcg gcg acg ccg      961
Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ala Ala Thr Pro
305               310               315               320
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ttc cct cac cgc aag gga gtc ctc ttc aac atc cag tac gtc aac tac    1009
Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr Val Asn Tyr
            325                     330                 335

tgg ttc gct ccg gga gcc ggc gcc gcg ccc ttg tca tgg agc aag gaa    1057
Trp Phe Ala Pro Gly Ala Gly Ala Ala Pro Leu Ser Trp Ser Lys Glu
            340                     345                 350

atc tac aac tac atg gag ccg tac gtg agc aag aac ccc agg cag gcc    1105
Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro Arg Gln Ala
            355                     360                 365

tac gcc aac tac agg gac atc gac ctc ggg agg aac gag gtg gtg aat    1153
Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu Val Val Asn
    370                     375                 380

ggc gtc tcc acc tac agc agt ggt aag gtc tgg gga cag aaa tat ttc    1201
Gly Val Ser Thr Tyr Ser Ser Gly Lys Val Trp Gly Gln Lys Tyr Phe
385                     390                 395                 400

aag ggt aac ttc gag agg ctc gcc att acc aag ggc aag gtg gat cct    1249
Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys Val Asp Pro
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            420
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            20                  25                  30

Asn Phe Ala Val Val Asp Leu Asn Gln Met Arg Ala Val Leu Val Asp
        35                  40                  45

Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln Leu Gly Glu
    50                  55                  60

Leu Tyr Tyr Ala Ile Ser Lys Tyr Ser Arg Thr Leu Ala Phe Pro Ala
65                  70                  75                  80

Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Leu Ala Gly Gly Gly
            85                  90                  95

Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu Asn Val Ile
            100                 105                 110

Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp Lys Lys Ser
            115                 120                 125
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Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly Gly Glu Ser
    130             135             140

Phe Gly Ile Val Val Ser Trp Gln Val Lys Leu Leu Pro Val Pro Pro
145             150             155             160

Thr Val Thr Ile Phe Lys Ile Pro Lys Ser Val Ser Glu Gly Ala Val
            165             170             175

Asp Ile Ile Asn Lys Trp Gln Leu Val Ala Pro Gln Leu Pro Ala Asp
            180             185             190

Leu Met Ile Arg Ile Ile Ala Met Gly Pro Lys Ala Thr Phe Glu Ala
            195             200             205

Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Met Met Gln Ser Lys
    210             215             220

Phe Pro Glu Leu Gly Met Asn Ala Ser His Cys Asn Glu Met Ser Trp
225             230             235             240

Ile Glu Ser Ile Pro Phe Val His Leu Gly His Arg Asp Ser Leu Glu
            245             250             255

Gly Asp Leu Leu Asn Arg Asn Asn Thr Phe Lys Pro Phe Ala Glu Tyr
            260             265             270

Lys Ser Asp Tyr Val Tyr Glu Pro Phe Pro Lys Ser Val Trp Glu Gln
            275             280             285

Ile Phe Gly Thr Trp Leu Val Lys Pro Gly Ala Gly Ile Met Ile Phe
    290             295             300

Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ala Ala Thr Pro
305             310             315             320

Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr Val Asn Tyr
            325             330             335

Trp Phe Ala Pro Gly Ala Gly Ala Ala Pro Leu Ser Trp Ser Lys Glu
            340             345             350

Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro Arg Gln Ala
    355             360             365

Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu Val Val Asn
    370             375             380

Gly Val Ser Thr Tyr Ser Ser Gly Lys Val Trp Gly Gln Lys Tyr Phe
385             390             395             400

Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys Val Asp Pro
            405             410             415

Thr Asp Tyr Phe Arg Asn Glu
            420
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<212> DNA
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 1               5                  10                  15

aaa gaa atc ccg ccg cgt ctg ttg tac gcg aaa tcg tcg ccg gcg tat    96
Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
                20                  25                  30

ccc tca gtc ctg ggg cag acc atc cgg aac tcg agg tgg tcg tcg ccg   144
Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
             35                  40                  45

gac aac gtg aag ccg ctc tac atc atc acc ccc acc aac gtc tcc cac   192
Asp Asn Val Lys Pro Leu Tyr Ile Ile Thr Pro Thr Asn Val Ser His
     50                  55                  60

atc cag tct gcc gtg gtg tgc ggc cgc cgt tac gac gtc cgc atc cgc   240
Ile Gln Ser Ala Val Val Cys Gly Arg Arg Tyr Asp Val Arg Ile Arg
 65                  70                  75                  80

gta cgc agc ggc ggg cac gac tac gag ggc ctc tcg tac cgc tcc ctg   288
Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu
                 85                  90                  95

cag ccc gag aac ttc gca gtc gtc gac ctc aac cag atg cgg gcg gtg   336
Gln Pro Glu Asn Phe Ala Val Val Asp Leu Asn Gln Met Arg Ala Val
                100                 105                 110

ttg gtg gac ggt aag gcc cgc acg gcg tgg gtc gac tcc ggc gcg cag   384
Leu Val Asp Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln
            115                 120                 125

ctc ggc gag ctc tac tac gcc atc tcc aag tat agc cgc acg ctg gcc   432
Leu Gly Glu Leu Tyr Tyr Ala Ile Ser Lys Tyr Ser Arg Thr Leu Ala
        130                 135                 140

ttc ccg gca ggc gtt tgc ccg acc atc ggc gtg ggc ggc aac ctc gcg   480
Phe Pro Ala Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Leu Ala
145                 150                 155                 160

ggc ggc ggc ttc ggt atg ctg ctg cgc aag tac ggc atc gcc gca gag   528
Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu
                165                 170                 175
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aac gtc atc gac gtg aag ctc gtc gac gcc aac ggc aag ctg cac gac      576
Asn Val Ile Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp
            180             185             190

aag aag tcc atg ggc gac gac cat ttc tgg gcc gtg agg ggt ggc ggc      624
Lys Lys Ser Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly
            195             200             205

ggc gag agc ttc ggc atc gtg gtc tcg tgg cag gtg aag ctc ctg ccg      672
Gly Glu Ser Phe Gly Ile Val Val Ser Trp Gln Val Lys Leu Leu Pro
            210             215             220

gtg cct ccc acg gtg acc atc ttc aag atc ccc aag tca gtc agc gag      720
Val Pro Pro Thr Val Thr Ile Phe Lys Ile Pro Lys Ser Val Ser Glu
225             230             235             240

ggc gcc gtg gac atc atc aac aag tgg caa ctg gtc gcg cct caa ctt      768
Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Leu Val Ala Pro Gln Leu
                245             250             255

ccc gcc gac ctc atg atc cgc atc att gcg atg ggg ccc aag gcc acg      816
Pro Ala Asp Leu Met Ile Arg Ile Ile Ala Met Gly Pro Lys Ala Thr
            260             265             270

ttc gag gcc atg tac ctc ggc acc tgc aaa acc ctg acg ccg atg atg      864
Phe Glu Ala Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Met Met
            275             280             285

cag agc aag ttc ccc gag ctt ggc atg aac gcc tcg cac tgc aac gag      912
Gln Ser Lys Phe Pro Glu Leu Gly Met Asn Ala Ser His Cys Asn Glu
            290             295             300

atg tca tgg atc gag tcc atc ccc ttc gtc cac ctc ggc cat agg gat      960
Met Ser Trp Ile Glu Ser Ile Pro Phe Val His Leu Gly His Arg Asp
305             310             315             320

tcc ctg gag ggc gac ctc ctc aac cgg aac aac acc ttc aag ccc ttt     1008
Ser Leu Glu Gly Asp Leu Leu Asn Arg Asn Asn Thr Phe Lys Pro Phe
                325             330             335

gcg gag tac aaa tcg gac tac gtc tac gag cca ttc ccc aag agc gtg     1056
Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Glu Pro Phe Pro Lys Ser Val
            340             345             350

tgg gag cag atc ttc ggc acc tgg ctc gtg aag cct ggt gcg ggg att     1104
Trp Glu Gln Ile Phe Gly Thr Trp Leu Val Lys Pro Gly Ala Gly Ile
            355             360             365

atg atc ttt gac ccc tac ggt gcc acc atc agc gct acc cca gaa gcg     1152
Met Ile Phe Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ala
            370             375             380

gcg acg ccg ttc cct cac cgc aag gga gtc ctc ttc aac atc cag tac     1200
Ala Thr Pro Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr
385             390             395             400
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gtc aac tac tgg ttc gct ccg gga gcc ggc gcc gcg ccc ttg tca tgg     1248
Val Asn Tyr Trp Phe Ala Pro Gly Ala Gly Ala Ala Pro Leu Ser Trp
            405                 410                 415

agc aag gaa atc tac aac tac atg gag ccg tac gtg agc aag aac ccc     1296
Ser Lys Glu Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
            420                 425                 430

agg cag gcc tac gcc aac tac agg gac atc gac ctc ggg agg aac gag     1344
Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu
            435                 440                 445

gtg gtg aat ggc gtc tcc acc tac agc agt ggt aag gtc tgg gga cag     1392
Val Val Asn Gly Val Ser Thr Tyr Ser Ser Gly Lys Val Trp Gly Gln
    450                 455                 460

aaa tat ttc aag ggt aac ttc gag agg ctc gcc att acc aag ggc aag     1440
Lys Tyr Phe Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys
465                 470                 475                 480

gtg gat cct acg gat tac ttc agg aac gag cag agc atc ccg ccg ctc     1488
Val Asp Pro Thr Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro Pro Leu
            485                 490                 495

atc aaa aag tac tga                                                 1503
Ile Lys Lys Tyr
            500


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<212> PRT
<213> Lolium perenne

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            20                  25                  30

Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
            35                  40                  45

Asp Asn Val Lys Pro Leu Tyr Ile Ile Thr Pro Thr Asn Val Ser His
            50                  55                  60

Ile Gln Ser Ala Val Val Cys Gly Arg Arg Tyr Asp Val Arg Ile Arg
 65                  70                  75                  80

Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu
                85                  90                  95

Gln Pro Glu Asn Phe Ala Val Val Asp Leu Asn Gln Met Arg Ala Val
            100                 105                 110

Leu Val Asp Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln
            115                 120                 125
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Leu Gly Glu Leu Tyr Tyr Ala Ile Ser Lys Tyr Ser Arg Thr Leu Ala
    130             135             140

Phe Pro Ala Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Leu Ala
145             150             155             160

Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu
                165             170             175

Asn Val Ile Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp
            180             185             190

Lys Lys Ser Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly
        195             200             205

Gly Glu Ser Phe Gly Ile Val Val Ser Trp Gln Val Lys Leu Leu Pro
    210             215             220

Val Pro Pro Thr Val Thr Ile Phe Lys Ile Pro Lys Ser Val Ser Glu
225             230             235             240

Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Leu Val Ala Pro Gln Leu
            245             250             255

Pro Ala Asp Leu Met Ile Arg Ile Ile Ala Met Gly Pro Lys Ala Thr
            260             265             270

Phe Glu Ala Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Met Met
        275             280             285

Gln Ser Lys Phe Pro Glu Leu Gly Met Asn Ala Ser His Cys Asn Glu
    290             295             300

Met Ser Trp Ile Glu Ser Ile Pro Phe Val His Leu Gly His Arg Asp
305             310             315             320

Ser Leu Glu Gly Asp Leu Leu Asn Arg Asn Asn Thr Phe Lys Pro Phe
            325             330             335

Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Glu Pro Phe Pro Lys Ser Val
        340             345             350

Trp Glu Gln Ile Phe Gly Thr Trp Leu Val Lys Pro Gly Ala Gly Ile
        355             360             365

Met Ile Phe Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ala
    370             375             380

Ala Thr Pro Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr
385             390             395             400

Val Asn Tyr Trp Phe Ala Pro Gly Ala Gly Ala Ala Pro Leu Ser Trp
            405             410             415

Ser Lys Glu Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
        420             425             430
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Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu
        435                 440                 445

Val Val Asn Gly Val Ser Thr Tyr Ser Ser Gly Lys Val Trp Gly Gln
        450                 455                 460

Lys Tyr Phe Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys
465             470                 475                     480

Val Asp Pro Thr Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro Pro Leu
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Ile Lys Lys Tyr
            500
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<212> DNA
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Tyr Phe Pro Pro Pro Ala Ala Lys Glu Asp Phe Leu Gly Cys Leu Val
  1               5                  10                  15

aaa gaa atc ccg ccg cgt ctg ttg tac gcg aaa tcg tcg ccg gcg tat      96
Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
             20                  25                  30

ccc tca gtc ctg ggg cag acc atc cgg aac tcg agg tgg tcg tcg ccg     144
Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
             35                  40                  45

gac aac gtg aag ccg ctc tac atc atc acc ccc acc aac gtc tcc cac     192
Asp Asn Val Lys Pro Leu Tyr Ile Ile Thr Pro Thr Asn Val Ser His
     50                  55                  60

atc cag tcc gcc gtg gtg tgc ggc cgc cgc cac agc gtc cgc atc cgc     240
Ile Gln Ser Ala Val Val Cys Gly Arg Arg His Ser Val Arg Ile Arg
 65                  70                  75                  80

gtg cgc agc ggc ggg cac gac tac gag ggc ctc tcg tac cgg tct ttg     288
Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu
                 85                  90                  95

cag ccc gag acg ttc gcc gtc gtc gac ctc aac aag atg cgg gcg gtg     336
Gln Pro Glu Thr Phe Ala Val Val Asp Leu Asn Lys Met Arg Ala Val
            100                 105                 110

tgg gtg gac ggc aag gcc cgc acg gcg tgg gtg gac tcc ggc gcg cag     384
Trp Val Asp Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln
            115                 120                 125
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ctc ggc gag ctc tac tac gcc atc tat aag gcg agc ccc acg ctg gcg    432
Leu Gly Glu Leu Tyr Tyr Ala Ile Tyr Lys Ala Ser Pro Thr Leu Ala
    130             135             140

ttc ccg gcc ggc gtg tgc ccg acg atc gga gtg ggc ggc aac ttc gcg    480
Phe Pro Ala Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Phe Ala
145             150             155             160

ggc ggc ggc ttc ggc atg ctg ctg cgc aag tac ggc atc gcc gcg gag    528
Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu
                165             170             175

aac gtc atc gac gtg aag ctc gtc gac gcc aac ggc aag ctg cac gac    576
Asn Val Ile Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp
                180             185             190

aag aag tcc atg ggc gac gac cat ttc tgg gcc gtc agg ggc ggc ggg    624
Lys Lys Ser Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly
            195             200             205

ggc gag agc ttc ggc atc gtg gtc gcg tgg cag gtg aag ctc ctg ccg    672
Gly Glu Ser Phe Gly Ile Val Val Ala Trp Gln Val Lys Leu Leu Pro
    210             215             220

gtg ccg ccc acc gtg aca ata ttc aag atc tcc aag aca gtg agc gag    720
Val Pro Pro Thr Val Thr Ile Phe Lys Ile Ser Lys Thr Val Ser Glu
225             230             235             240

ggc gcc gtg gac atc atc aac aag tgg caa gtg gtc gcg ccg cag ctt    768
Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Val Val Ala Pro Gln Leu
                245             250             255

ccc gcc gac ctc atg atc cgc atc atc gcg cag ggg ccc aag gcc acg    816
Pro Ala Asp Leu Met Ile Arg Ile Ile Ala Gln Gly Pro Lys Ala Thr
                260             265             270

ttc gag gcc atg tac ctc ggc acc tgc aaa acc ctg acg ccg ttg atg    864
Phe Glu Ala Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Leu Met
        275             280             285

agc agc aag ttc ccg gag ctc ggc atg aac ccc tcc cac tgc aac gag    912
Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Pro Ser His Cys Asn Glu
    290             295             300

atg tca tgg atc cag tcc atc ccc ttc gtc cac ctc ggc cac agg gac    960
Met Ser Trp Ile Gln Ser Ile Pro Phe Val His Leu Gly His Arg Asp
305             310             315             320

gcc ctc gag gac gac ctc ctc aac cgg aac aac tcc ttc aag ccc ttc   1008
Ala Leu Glu Asp Asp Leu Leu Asn Arg Asn Asn Ser Phe Lys Pro Phe
                325             330             335

gcc gaa tac aag tcc gac tac gtc tac cag ccc ttc ccc aag acc gtc   1056
Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln Pro Phe Pro Lys Thr Val
            340             345             350
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tgg gag cag atc ctc aac acc tgg ctc gtc aag ccc ggc gcc ggg atc      1104
Trp Glu Gln Ile Leu Asn Thr Trp Leu Val Lys Pro Gly Ala Gly Ile
        355                 360                 365

atg atc ttc gac ccc tac ggc gcc acc atc agc gcc acc ccg gag tcc      1152
Met Ile Phe Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ser
    370                 375                 380

gcc acg ccc ttc cct cac cgc aag ggc gtc ctc ttc aac atc cag tac      1200
Ala Thr Pro Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr
385                 390                 395                 400

gtc aac tac tgg ttc gcc ccg gga gcc gcc gcc gcg ccc ctc tcg tgg      1248
Val Asn Tyr Trp Phe Ala Pro Gly Ala Ala Ala Ala Pro Leu Ser Trp
                405                 410                 415

agc aag gac atc tac aac tac atg gag ccc tac gtg agc aag aac ccc      1296
Ser Lys Asp Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
                420                 425                 430

agg cag gcg tac gca aac tac agg gac atc gac ctc ggc agg aac gag      1344
Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu
        435                 440                 445

gtg gtc aac gac gtc tcc acc tac gcc agc ggc aag gtc tgg ggc cag      1392
Val Val Asn Asp Val Ser Thr Tyr Ala Ser Gly Lys Val Trp Gly Gln
    450                 455                 460

aaa tac ttc aag ggc aac ttc gag agg ctc gcc att acc aag ggc aag      1440
Lys Tyr Phe Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys
465                 470                 475                 480

gtc gat cct acc gac tac ttc agg aac gag cag agc atc ccg ccg ctc      1488
Val Asp Pro Thr Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro Pro Leu
                485                 490                 495

atc aaa aag tac tga                                                  1503
Ile Lys Lys Tyr
                500
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<210> 6
<211> 500
<212> PRT
<213> Phleum pratense

<400> 6
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 1               5                  10                  15

Lys Glu Ile Pro Pro Arg Leu Leu Tyr Ala Lys Ser Ser Pro Ala Tyr
            20                  25                  30

Pro Ser Val Leu Gly Gln Thr Ile Arg Asn Ser Arg Trp Ser Ser Pro
            35                  40                  45

Asp Asn Val Lys Pro Leu Tyr Ile Ile Thr Pro Thr Asn Val Ser His
    50                  55                  60
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Ile Gln Ser Ala Val Val Cys Gly Arg Arg His Ser Val Arg Ile Arg
 65   70   75   Val Arg Ile Arg
                                                                      80

Val Arg Ser Gly Gly His Asp Tyr Glu Gly Leu Ser Tyr Arg Ser Leu
                85   90   95

Gln Pro Glu Thr Phe Ala Val Val Asp Leu Asn Lys Met Arg Ala Val
               100   105   110

Trp Val Asp Gly Lys Ala Arg Thr Ala Trp Val Asp Ser Gly Ala Gln
               115   120   125

Leu Gly Glu Leu Tyr Tyr Ala Ile Tyr Lys Ala Ser Pro Thr Leu Ala
     130   135   140

Phe Pro Ala Gly Val Cys Pro Thr Ile Gly Val Gly Gly Asn Phe Ala
145   150   155   160

Gly Gly Gly Phe Gly Met Leu Leu Arg Lys Tyr Gly Ile Ala Ala Glu
               165   170   175

Asn Val Ile Asp Val Lys Leu Val Asp Ala Asn Gly Lys Leu His Asp
          180   185   190

Lys Lys Ser Met Gly Asp Asp His Phe Trp Ala Val Arg Gly Gly Gly
          195   200   205

Gly Glu Ser Phe Gly Ile Val Val Ala Trp Gln Val Lys Leu Leu Pro
     210   215   220

Val Pro Pro Thr Val Thr Ile Phe Lys Ile Ser Lys Thr Val Ser Glu
225   230   235   240

Gly Ala Val Asp Ile Ile Asn Lys Trp Gln Val Val Ala Pro Gln Leu
               245   250   255

Pro Ala Asp Leu Met Ile Arg Ile Ile Ala Gln Gly Pro Lys Ala Thr
          260   265   270

Phe Glu Ala Met Tyr Leu Gly Thr Cys Lys Thr Leu Thr Pro Leu Met
          275   280   285

Ser Ser Lys Phe Pro Glu Leu Gly Met Asn Pro Ser His Cys Asn Glu
     290   295   300

Met Ser Trp Ile Gln Ser Ile Pro Phe Val His Leu Gly His Arg Asp
305   310   315   320

Ala Leu Glu Asp Asp Leu Leu Asn Arg Asn Asn Ser Phe Lys Pro Phe
               325   330   335

Ala Glu Tyr Lys Ser Asp Tyr Val Tyr Gln Pro Phe Pro Lys Thr Val
          340   345   350

Trp Glu Gln Ile Leu Asn Thr Trp Leu Val Lys Pro Gly Ala Gly Ile
     355   360   365

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Met Ile Phe Asp Pro Tyr Gly Ala Thr Ile Ser Ala Thr Pro Glu Ser
    370                 375             380

Ala Thr Pro Phe Pro His Arg Lys Gly Val Leu Phe Asn Ile Gln Tyr
385             390             395                     400

Val Asn Tyr Trp Phe Ala Pro Gly Ala Ala Ala Ala Pro Leu Ser Trp
            405             410             415

Ser Lys Asp Ile Tyr Asn Tyr Met Glu Pro Tyr Val Ser Lys Asn Pro
            420             425             430

Arg Gln Ala Tyr Ala Asn Tyr Arg Asp Ile Asp Leu Gly Arg Asn Glu
    435             440             445

Val Val Asn Asp Val Ser Thr Tyr Ala Ser Gly Lys Val Trp Gly Gln
    450             455             460

Lys Tyr Phe Lys Gly Asn Phe Glu Arg Leu Ala Ile Thr Lys Gly Lys
465             470             475                     480

Val Asp Pro Thr Asp Tyr Phe Arg Asn Glu Gln Ser Ile Pro Pro Leu
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Ile Lys Lys Tyr
            500
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<210> 7
<211> 12
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<213> Dactylus glomerata

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 1               5                   10
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<212> PRT
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<400> 8
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 1               5                   10
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<211> 17
<212> PRT
<213> Dactylus glomerata

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Tyr

<210> 10
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<212> PRT
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<210> 11
<211> 11
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 1   5   10

<210> 12
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<212> PRT
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<400> 12
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Gln Leu Tyr Leu Lys Ser
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 1   5   10   15

<210> 14
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 1   5   10   15

Val Asp Ala Gln Gly Arg Leu Leu
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Gly Lys Tyr

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 1   5   10   15

Glu Pro Ile Pro Lys Lys Ser
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<210> 19
<211> 13
<212> PRT
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<212> PRT
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<400> 20
Ser Ala Thr Pro Pro Thr His Arg Ser Gly Val Leu Phe Asn Ile
 1   5   10   15

<210> 21
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 1   5   10   15

Met Thr Pro Tyr Val Ser Lys Asn Pro Arg Gln Ala Tyr Val Asn Tyr
            20   25   30

Arg Asp Leu Asp
        35

<210> 22
<211> 14
<212> PRT
<213> Lolium perenne

<400> 22
Phe Leu Glu Pro Val Leu Gly Leu Ile Phe Pro Ala Gly Val
 1   5   10

<210> 23
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<212> PRT
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<400> 23
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